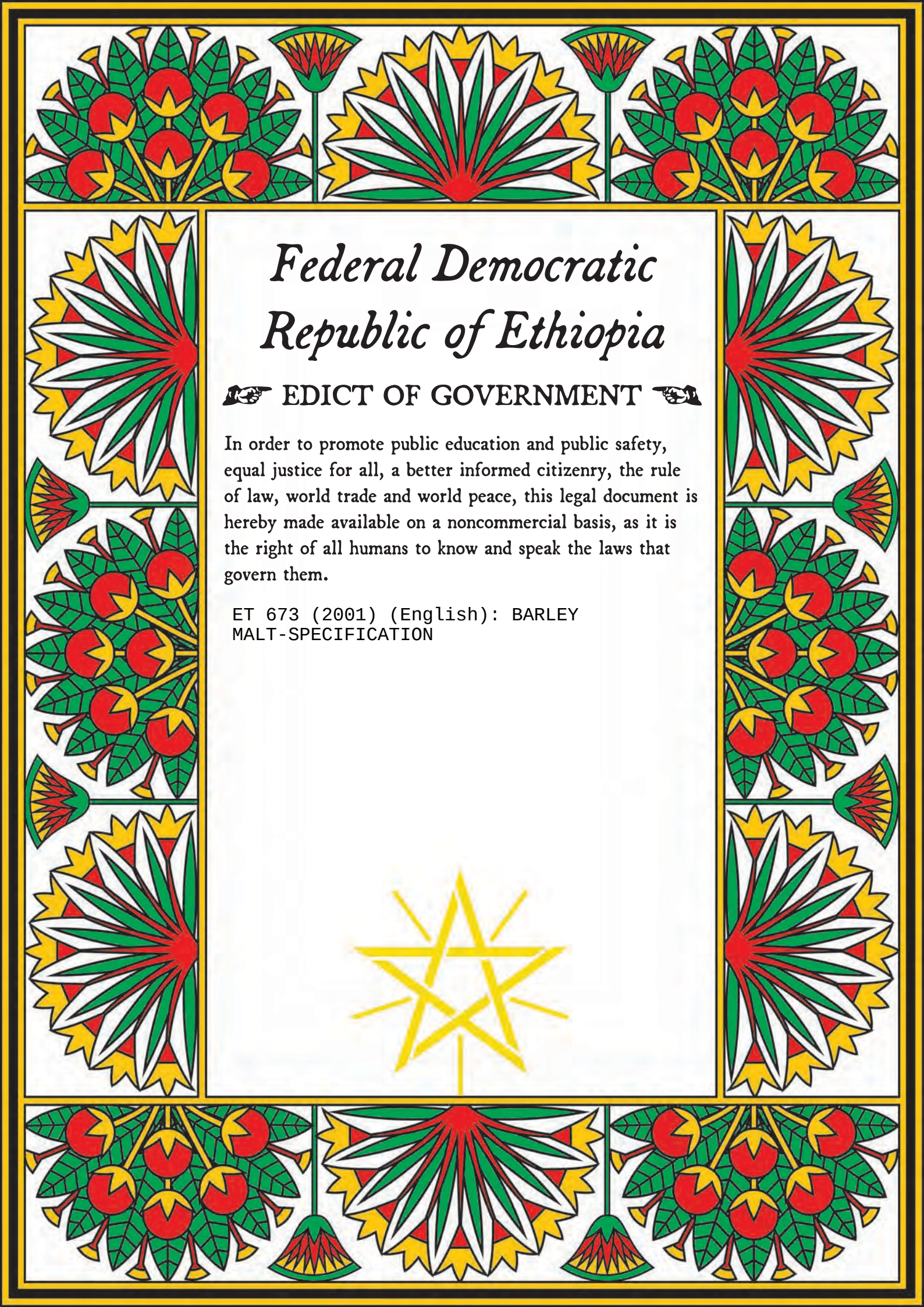




Federal Democratic Republic of Ethiopia

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ET 673 (2001) (English): BARLEY
MALT-SPECIFICATION



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First edition

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Foreword

This Ethiopian Standard has been prepared under the direction of the Technical Committee for Cereals, pulses and derived products (TC 11) and published by the Ethiopian Standards Agency (ESA).

The standard is a reaffirmation for reprint of the Ethiopian Standard ES :2001, - , with some editorial changes without altering the technical contents in the former text.

Barley malt — Specification

1 Scope

This Ethiopian Standard specifies the requirements for pilson type barley malt prepared from two or six rowed malting barley.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Ethiopian Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Ethiopian Standard are encouraged to investigate the possibility of applying the most recent editions of the Ethiopian Standards indicated below. Registers of currently valid standards are maintained in the Quality and Standards Authority of Ethiopia.

ES 667:2001, *Cereals – Determination of impurities.*

ES ISO 520:2001, *Cereals and pulses – Determination of the mass of 1000 grains.*

ES ISO 711:2001, *Cereals and cereal products – Determination of moisture content (Basic reference method).*

ES ISO 712:2001, *Cereals and Cereal products – Determination of moisture content (Basic reference method)*

ES ISO 5223:2001, *Test sieves for cereals.*

ES ISO 6322-1:2001, *Storage of cereals and pulses- Part 1: General recommendations in keeping cereals.*

ES ISO 6322-2:2001, *Storage of cereals and pulses- Part 2: Essential requirements.*

ES ISO 6322-3:2001, *Storage of cereals and pulses- Part 3: Control of attack of pests.*

ES ISO 6639-1:2001, *Cereal and pulses – Determination of hidden insect infestation - Part 1: General principles.*

ES ISO 6639-2:2001, *Cereal and pulses – Determination of hidden insect infestation - Part 2: Sampling.*

ES ISO 6639-3:2001, *Cereal and pulses – Determination of hidden insect infestation - Part 3: Reference method.*

ES ISO 6639-4:2001, *Cereal and pulses – Determination of hidden insect infestation - Part 4: Rapid method.*

ES ISO 6644:2001, *Cereals and milled cereal products – Automatic sampling by mechanical means.*

ES ISO 7971:2001, *Cereals – Determination of bulk density called “mass per hectolitre”.*

ES ISO 7971-2:2001, *Cereals – Determination of bulk density called “mass per hectolitre” (Routine method).*

ES ISO 13690:2001, *Cereals, pulses and milled products – Sampling of static batches.*

3 Definitions

For the purpose of this standard the definitions in ES 668 and the following shall apply.

3.1

mash

a mixture of ground barley malt with hot water conditioned which have been mixed in a masher

3.2

wort

the liquid which is obtained from mash of malt barley to make beer

3.3

dead barley

dead barley kernels are kernels which have not germinated due to damaged embryo or incomplete recovery from dormancy.

4 Requirements

4.1 General

4.1.1 Barley malt shall possess flavour which is typical and characteristic of clean malt. It shall be free from off flavour. It shall be sweet and free from any trace of bitterness.

4.1.2 The proportion of broken kernels shall not exceed 2% .

4.1.3 The mass of dead barley kernels shall not be more than 8% by mass.

4.1.4 Barley malt shall be free hidden insect infestation living insect, dead insects fragments, molds and rodent contamination visible to the naked eye and when determined with the method of test specified in ES ISO 6639/ 1 to 4.

4.1.5 Mesh of barley malt shall be free from moldy or smoky smell.

4.1.6 Wort of barley malt shall be bright or slightly opalescent in appearance.

4.1.7 The acrospire length of malted barley shall be measured from length of the acrospire 0 to $\frac{1}{4}$, $\frac{1}{4}$ to $\frac{1}{2}$, $\frac{1}{2}$ to $\frac{3}{4}$ to of the size of the grain as indicate in annex A - here in.

4.2 Grades

Malted barley shall comply with the grade requirements specified in Table 1.

Table 1 Grade requirements for barley malt

SN	Grading characteristics	Grades			Method of tests
		1	2	3	
1	Protein content, % by mass, on dry	9 - 11	11.1-11.5	11.51-12.0	ES 669
2	Test mass kg/hl, min	62	55	48	ES ISO 7971-2 ES ISO 7971
3	Yield extraction on dry basis% by mass, min	82	80	77	ES 659
4	Viscosity, m Pa. sec	1.51-1.56	1.57-1.60	1.61-1.63	ES 661
5	Difference in yield of extract between coarse and fine grindings, max	1.3 - 1.9	2.0-2.6	2.7-3.3	ES 659
6	Saccherification time, in minutes	under 10	11 to 15	15.1 to 20.0	ES 659
7	Foreign matter, % by mass, max	0.5	1.0	1.5	ES 667
8	Kolboch index	42 - 45	38-41	35-37	ES 662
9	Diastatic power (Linter value (DK.), min	350	250	200	ES 662
10	Wort color	2.5-4	2.5-4	2.5-4	ES 660
11	Wort PH	5.6-5.9	2.6-5.9	5.6-5.9	ES 659
12	Moisture content, % by mass, max.	3.0-3.5	3.51-4.5	4.51-5.8	ES ISO 712 ES ISO 712
13	Speed of filtration, in minutes, max	45	50	60	ES 659
14	Mass of 1000 grains	35	30	25	ES ISO 520

5 Size

Barley malt shall be graded using oblong hole sieve sizes as indicated in ES ISO 5223 as follows :

2.8 mm oblong sieve size = 35 to 45% by mass of kernels

2.5 mm oblong sieve size = 40 to 50% by mass of kernels

2.2 mm oblong sieve size = 5 to 10% by mass of kernels

below 2.2 mm oblong sieve size shall not be more than 3% by mass.

6 Mass of 1000 grains

The quality of malt barley shall be determined by the mass of 1000 in accordance with the method of test specified in ES ISO 520.

7 Sampling

Sampling shall be carried out in accordance with ES ISO 13690 or ES ISO 6644.

8 Packing

Malt barley shall be packed in suitable, clean sound and moisture proof (packages) as specified in ES 666.

9 Labelling and marking

9.1 Labelling

Each container of malt barley shall be labelled with the following information;

- a) Name of the grain ;
- b) Name and address of producer, importer/exporter ;
- c) Crop year ;
- d) Class and grade of the grain ;
- e) Country of origin ;
- f) Net mass in kilogram ;
- g) Batch or identification code ; and
- h) Any other requirements required by the purchaser.

9.2 Marking

Each container containing barley malt that is in compliance with this Ethiopian Standards shall bear the Quality mark upon approval by the Quality and Standards Authority of Ethiopia (QSAE).

10 Compliance with the Standard

A lot of barley malt shall be deemed to comply with this Ethiopian Standards if upon inspection and testing the provision in clause 4, 5 and 9 are satisfied.

Annex -A

Determination of acrospire length of malt barley

A.1 Principle

The acrospire length of malt grain shall be determined as a fraction of a grain length by making the husk of a grain transparent.

A.2 Apparatus

A.2.1 Beaker, 100 ml

A.2.2 Ceramic plate

A.2.3 Spatula/glass rod

A.3 Reagents copper sulphate solution 5%

A.4 Sampling of malt barely shall be carried out accordance with the method of test specified in ES ISO 13690 or ES ISO 6644.

A.5 Procedure

Place 100 grains of malting barley from representative sample in 100 ml beaker. Fill in 40 ml of 5% copper sulphate solution. Boil it for 5 minutes, cool and decant the remaining solution from the beaker. Using a glass rode or spatula count the grains on a ceramic plate. Then the tip of the acrospire is half way up the grain, the length of the acrospire is said to be $\frac{1}{2}$, when the tip reaches the grains apex its length is said to be 1 and so on.

A.6 Test report

The test report shall show the method used and the results obtained.



Organization and Objectives

The Ethiopian Standards Agency (ESA) is the national standards body of Ethiopia established in 2010 based on regulation No. 193/2010. ESA is established due to the restructuring of Quality and Standards Authority of Ethiopia (QSAE) which was established in 1970.

ESA's objectives are:-

- ❖ Develop Ethiopian standards and establish a system that enable to check whether goods and services are in compliance with the required standards,
- ❖ Facilitate the country's technology transfer through the use of standards,
- ❖ Develop national standards for local products and services so as to make them competitive in the international market.

Ethiopian Standards

The Ethiopian Standards are developed by national technical committees which are composed of different stakeholders consisting of educational Institutions, research institutes, government organizations, certification, inspection, and testing organizations, regulatory bodies, consumer association etc. The requirements and/or recommendations contained in Ethiopian Standards are consensus based that reflects the interest of the TC representatives and also of comments received from the public and other sources. Ethiopian Standards are approved by the National Standardization Council and are kept under continuous review after publication and updated regularly to take account of latest scientific and technological changes.

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